

Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in this application.

Listing of Claims:

1. (Currently amended) A system for transmitting signals through an imperfectly-conducting medium comprising:

a transmitter station, the transmitter station comprising:

a transmitter, and one or more transmitter conductors coupled to the transmitter, wherein the transmitter causes a signal to be transmitted to be coupled to the transmitter conductors to cause a current to flow in the imperfectly-conducting medium, thereby creating an electric field corresponding to the signal to be transmitted;

a receiver station, the receiver station comprising:

a receiver, and

one or more receiver conductors coupled to the receiver through one or more leads, wherein the receiver conductors receive the signal to be transmitted by sensing the electric field; and

~~output means for outputting the received signal.~~

analysis means, wherein the received signal is analyzed to determine characteristics or features of the imperfectly-conducting medium.

2. (Original) The system recited in claim 1, wherein the transmitter station and the receiver station are contained in a single-unit transceiver.

3. (Original) The system recited in claim 1, wherein one of the receiver station and the transmitter station has a single conductor.
4. (Original) The system recited in claim 1, wherein either or both the transmitter station or the receiver station is not submerged in the imperfectly-conducting medium.
5. (Currently amended) The system recited in claim 1, ~~wherein either or both the transmitter station and receiver station are not immersed in the imperfectly-conducting medium, and wherein the system is used~~ wherein the analysis means comprises means to determine a property of the imperfectly-conducting medium.
6. (Currently amended) The system recited in ~~claim 2-~~ claim 1, wherein the ~~transceiver~~ is transmitter conductors are submerged in the imperfectly-conducting medium and wherein the analysis means comprises means to use changes in the electric field ~~are analyzed~~ to determine the presence of an object in the imperfectly-conducting medium.
7. (Currently amended) The system recited in claim 1, wherein the receiver station further comprises;

 more than two conductors, and

 a combiner for selecting signals from two of the conductors, for input to the receiver.

whereby the orientation and strength of the electric field can be measured.
8. (Original) The system recited in claim 7, wherein the system finds the greatest signal strength of the available conductor pairs.
9. (Original) The system recited in claim 1, wherein the receiver station further comprises;

more than two conductors, and

a combiner which connects the conductors into two connected groups, for input to the receiver.

10. (Original) The system recited in claim 9, wherein the system finds the greatest signal strength of the available connected groups of conductors.

11 – 21. (Canceled)

22. (New) A system for transmitting signals through an imperfectly-conducting medium comprising:

a transmitter that causes a signal to be transmitted;

a receiver;

a first wireless propagation path within the imperfectly-conducting medium, wherein an electrical field corresponding to the signal is produced;

a second wireless propagation path not within the imperfectly-conducting medium, wherein an electromagnetic field corresponding to the signal is produced;

a set of one or more conductors coupled to the imperfectly-conducting medium and to either the transmitter or the receiver through one or more leads; and

output means for outputting the received signal,

whereby the signal to be transmitted propagates through the first wireless propagation path and through the second wireless propagation path from the transmitter to the receiver.

23. (New) The system recited in claim 22, wherein the imperfectly-conducting medium is water.

24. (New) The system recited in claim 22, wherein the imperfectly-conducting medium is the earth.

25. (New) The system recited in claim 22, wherein the set of one or more conductors is coupled to the receiver, further comprising

a single transmit conductor coupled to the transmitter through a lead and coupled to the imperfectly-conducting medium and

a counterpoise coupled to the transmitter through a lead and not coupled to the imperfectly-conducting medium,

whereby an electric field is created in the imperfectly-conducting medium.

26. (New) The system recited in claim 25, wherein the counterpoise is self-contained with the transmitter.

27. (New) The system recited in claim 22, wherein the transmitter and receiver conductors are self-contained.

28. (New) The system recited in claim 22, wherein one or more of the set of conductors comprises a metallic material having a length and width much greater than its thickness, whereby the relative surface area that couples to the imperfectly-conducting medium is large with respect to the amount of the metallic material.

29. (New) A method for transmitting a wireless signal through an imperfectly-conducting medium comprising the steps of:

generating a signal to be transmitted through the imperfectly-conducting medium;
generating a wireless electric field within the imperfectly-conducting medium

corresponding to the signal;

generating a wireless electromagnetic field outside or along the boundary of the imperfectly-conducting medium corresponding to the electric field;

sensing the electromagnetic field to detect the signal; and

outputting the signal.

30. (New) The method recited in claim 29, further comprising the step of detecting characteristics or features of the imperfectly-conducting medium.

31. (New) The method recited in claim 29, further comprising the step of determining the orientation of the electric field.

32. (New) The method recited in claim 29, further comprising the step of determining a property of the imperfectly-conducting medium.